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EXPRESS MAIL LABEL NO. EL470370794US

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Washington, D. C. 20231

Sir:

Transmitted herewith for filing is the patent application of:

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TITLE: *SYSTEM AND METHOD FOR GROUPING RECIPIENTS OF STREAMING DATA*

In connection with this application, the following are enclosed:

25	Pages of Specification, Claims and Abstract
47	Claims
5	Sheets of Drawings (FIGS. 1-5)
XX	Declaration, Power of Attorney
XX	Assignment to: International Business Machines Corporation

The fee has been calculated as shown below. (Small entity fees indicated in parentheses.)

(1) For	(2) Number Filed		(3) Number Extra	(4) Rate	(5) Basic Fee $690($345)
Total Claims	47	20	27	$18 ($9)	486
Independent Claims	7	3	4	$78 ($39)	312
Multiple Dependent Claims			0	$270 ($135)	0
Assignment Recording Fee				$40	40
				TOTAL FEE:	$ 1528

XX The Commissioner is hereby authorized to charge Deposit Account No. 09-0452 in the amount of $1528.00. A duplicate copy of this sheet is enclosed.

XX The Commissioner is hereby authorized to charge payments of (1) any additional filing fees required under 37 CFR 1.16, and/or (2) any patent application processing fees under 37 CFR 1.17 associated with this application or credit any overpayment to Deposit Account No. 09-0452.

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	:	Atty Docket: BC9-99-059
Edith H. STERN *et al.*	:	APPLICATIONS BRANCH
Serial No. (not yet assigned)	:	
Filed: HEREWITH	:	

FOR: *SYSTEM AND METHOD FOR GROUPING RECIPIENTS OF STREAMING DATA*

CERTIFICATE OF EXPRESS MAIL MAILING

"Express Mail" Mailing Label No. **EL470370794US**
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X	Application Transmittal
X	Specification, Claims, Abstract
X	1 set of 5 sheets of drawings
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PATENT

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SYSTEM AND METHOD FOR GROUPING RECIPIENTS OF STREAMING DATA

Background Of The Invention

1. Field of the Invention

This invention relates in general to the transmission of data in a data stream over a telecommunications medium such as the Internet and, more particularly to the placement of recipients of that streaming data into identifiable groups by space or time, relative to the streaming data, to avoid congestion of users making demands for the streaming data substantially at the same time or at the same place in the data transmission.

2. Description of the Prior Art

Streaming data transmitted through the Internet, is a well-known technique for sending data expected to be received in a continuous form. Such data, for example, may be the current prices at the New York Stock Exchange, or video data such as a replay of a sport highlight or a fashion show. While the resources which may be

allocated for transmitting the data may be adequate in many cases, at other times, the resources for sending the data may be inadequate for the task relative to the number of recipients demanding the data at substantially the same time or at the same place in the data base or data store. The consequence of any such inadequate resource allocation will be congestion and disappointed recipients who demand the data but are placed low or out of the queue because there are an insufficient number of servers, for example, to retrieve the data from the store and place it on the Internet for transmission to the recipients.

Other entities which receive demands, as described above, placing an overload on the resources used to transmit the streaming data might supply music or even static web pages. Any such demand, coming from the recipient end of the transmission medium, cannot be predicted until the demands for data are made. At the same time, the recipient expects the demand to be instantly satisfied by immediate connection to the data and to promptly begin enjoying the show or the web pages or the music or whatever may be represented or contained in the data stream.

Accordingly, there is a need for managing demands or requests made at substantially the same time or at the same location in the data stream, which may be beyond the system capability for supplying the information within the time expected and which reduces this peak load and shifts it over the space of the data transmission while preserving the impression of immediate satisfaction for each information recipient.

Summary Of The Invention

As disclosed in a preferred embodiment, according to the inventive principles disclosed a system and method is shown for spreading the load placed on a transmission facility to drive a condition of load peaks toward a steady state condition. The system and method shown, may be described as virtually personalizing streamed data to a respective recipient or user, preserving the impression to the individual recipient that it is being immediately served with a requested data file or video or audio data feed, while at the same time, that individual recipient is being shifted in time or space, relative to the data transmission and data file or data feed, as requested. The system includes a server having a data store, with an interface for connection to a telecommunications medium and a data processor for receiving recipient's or users' requests for information to be sent in a data stream by said server over said telecommunications medium. The server, responsive to the requests, arranging the recipients or users in groups with each of the users being arranged in a respective group; and with the data processor sending the data stream from the data store, to the groups. The server can realign a respective user with a said data stream to change the location in said data stream from which the user is receiving the data, for example, by moving a pointer associated with the user's respective socket to another location in said data store, or the position of the user relative to the data in the data stream can be changed in relation to the time of the data being transmitted in said data stream, by realigning the user or recipient with a different server socket and port delivering or transmitting a time shifted part of the data transmission. As used in connection with the description of a preferred embodiment and according to the disclosed inventive principles or as claimed, a server may be any suitable device capable of performing the described or claimed functions or method steps, as may be known to one skilled in the art now or in the future and is not limited to any particular arrangement of elements for performing such server functions or steps. As would be known to one skilled in the art,

by server is meant any device and its equivalents arranged to performed such functions or method steps, described or claimed in relation to a server whether described in its elemental parts or as a single unit or generally as a means performing a function.

As stated above, according to the inventive principles as disclosed in connection with the preferred embodiment, an allocation of server resources is used to reduce peak loads and drive a system for providing data in a stream for example, on demand, by grouping the users demanding the data. Such groups may be identified by time of demand or place of demand or by any other scheme for identifying the users without departing from the principles of the disclosed invention. According to the inventive principles as disclosed in connection with the preferred embodiment, the groups are assembled by a number limited with respect to the available servers available to transmit the requested data as disclosed with regard to the example shown for an Internet connection. Another such system for grouping users may be by the time of request, for example by grouping users requesting the data within a set period. According to the inventive principles as disclosed in connection with the preferred embodiment, these systems may be combined, for example, by grouping the next 10 users or the next users making a request in the next 10 seconds, whichever comes first.

Once the groups are assembled, a server may associate all of the users in a respective group with a server and a socket aligned with a pointer to a data location in the data store accessed or read to produce the data transmission. As successive groups are assembled, according the system chosen, the users or recipients in the successively assembled groups may be started at the current instant in time or in the current data location being transmitted from the data store, to all of the previous groups. In that case, each user or recipient may be added at the data transmission is in progress. A data loop may be employed to transmit the data continuously so each user or recipient may receive the whole content, as the data transmission progresses

through its loop and starts again. In this way, users or recipients may be entering or receiving the data transmission or leaving and terminating the data transmission, as the data transmission returns to the time or data location of an individual's connection to the data, individually, without disturbing any other recipient. If the system is arranged to terminate a group and its users when a loop transmission is at its logical end, according to the inventive principles as disclosed in connection with the preferred embodiment, the user may request a reconnect to another group in formation or be automatically place in another such group, to receive the portion missed, for example from the beginning.

Where the system uses data in the form of signaling between the recipient or user and the server to acknowledge successful receipt of the data or to signal data loss, the system may be arranged, according to the inventive principles as disclosed in connection with the preferred embodiment, to continue the transmission without providing the lost data, or alternatively, the user or recipient can be moved to another group receiving the data transmission from a time in the data transmission corresponding to the lost data portion.

According to the inventive principles as disclosed in connection with the preferred embodiment, the user or recipient may be moved relative to the time or data store location of the data transmission, by moving the recipient or user to successive groups or server connections associated with different parts of the data. In this way, the user may be alternatively connected, for example and according to the inventive principles as disclosed in connection with the preferred embodiment, with selected material such as advertisements interspersed in the data transmission.

The systems or data protocols for signaling the successful receipt of data or loss of data as well as the systems and methods for assembling users requesting data and assembling such users in a group by time of request or in a group by the group size, is

well known to those of ordinary skill in the art and not described. As used in describing the invention according to the inventive principles as disclosed in connection with the preferred embodiment, the transmission of data as described in a data stream or as streaming data is not to be limited to a continuous data stream but may include discontinuous data or data which is sent in frames or in any other relationship, or a data file transmitted repetitively.

Brief Description Of The Drawings

Fig. 1 is a block diagram showing an exemplary system for serving streaming data individually on a one to one relationship through individual server ports and sockets matched to each such user or recipient.

Fig. 2 is a block diagram illustrating users or recipients that are grouped so each user or recipient in a respective group receives the same data from the same port, according to a preferred embodiment of the present invention.

Fig. 3 is a flow diagram for an exemplary system for resetting a user to a different location in the data, according to a preferred embodiment of the present invention.

Fig. 4 is a block diagram, according to the inventive principles as disclosed in connection with the preferred embodiment, illustrating a system for shifting users between ports receiving or accessing respective locations in the data store, for example, to shift the user within the data transmission or to shift the user to material inserted into a data stream.

Fig. 5 shows in a block diagram an example of a networked server as may be

used in connection with the disclosed invention.

Description Of A Preferred Embodiment

A system for transmitting data in a data stream or streaming data, directly to individual users, is shown in Fig, 1. As shown, each user U1, U2, ...Un, is associated with a respective port and socket in a server. As would be well known to one of ordinary skill in the art, a socket may be an arrangement of data and command standards for designating addresses, data structure and data signaling standards.

According to the inventive principles as disclosed in connection with the preferred embodiment, in one example, shown in Fig. 2, where data is sent in blocks or in packets, as known to those of ordinary skill in the art, lost data may be identified by identifiable blocks or packets of data, and the user, when assembled in a group according to the principles of the invention, may be realigned with the data transmission to recover the lost data. As shown in Fig. 2, the users are associated in groups and assembled by number or time of request, as described above. For example, users U1, U2, and U3, are assembled into a group to receive the data transmission from server port P0 currently associated with time T0 in the data stream, through user respective sockets connected to that port. Similarly, U4, U5, and U6 are assembled as described above, into another respective group to receive the data transmission shifted with respect to the data transmission from port P1, associated with time T1 in the data stream, through the users' respective sockets. This arrangement may be repeated to users Un-2, Un-1 and Un, for example. In the example shown in Fig. 2, users U1 to U3 are at point T0 in the data transmission and users U4 to U6 are at point T1, and so on. As stated above, the users U1 to Un, may be assembled in groups by grouping a discrete number of requesting users or by grouping users, requesting the data

transmission within a designated time.

In the example shown in Fig 3, the system for shifting groups of users is described in a block diagram. In a typical application, a user may request a data transmission at some point in the data flow, whether at the beginning or after. The user may make its request because of an announcement of an event to start at a specified time or randomly, depending on when the user first hears of the event and desires to access the data. For example, an announcement of the rebroadcast of the President's State of the Nation speech at a designated time may cause more individual users to access the available servers than there are servers available to immediately provide the data. In that case, the system, to provide to the user a virtual personalized data transmission, arranges the users in respective groups, defined for example, by respective server port or with a respective socket aligned with a pointer Pi at a respective location in the data store and media stream M. At that time, the server may begin to transmit the data from the store M to the users associated with the respective socket and pointer Pi. Where a data signaling system is used to indicate the successful transmission of data, the pointer is advance to the next location in the media stream M for transmission. Where there is an indication of lost data, the server may reconnect the user suffering lost data with another server port and socket aligned with a pointer Pj closest to, and before, the identified lost blocks or packets or otherwise identified data. The server then would continue to be used to transmit the data as before, with the only change being the user's location in the stream media M connected to the user.

Fig. 4 shows the system and method according to the inventive principles as disclosed in connection with the preferred embodiment, with a user associated with a single socket at various time intervals T1, T2, T3 .....Ti, Ti+1, Ti+2. In the disclosed example, the socket for a user is connected with a pointer to the media M. Where new material is to be inserted into the data transmission, for example at time Ti, and time

Ti+1, the socket is moved from pointer Pi to a pointer accessing the inserted material, which would be from another location in the data store or from another data store. At time Ti+2, at the end of the inserted material, the socket is again reconnected with pointer Pi and the data transmission resumed. Alternatively, a user associated with a pointer, P1 for example, may be time shifted to another location in the data stream, for example time Ti+2, by associating that user with another socket associated with respective pointer Pi+1. There is no restriction on the time spent in streaming inserted material or on the number of inserts or on the time interval shifted for any user in a group as it is accomplished by shifting that user to another group associated with a different pointer into the data media M or to a socket receiving the data at a different time location in the data stream.

According to the inventive principles as disclosed in connection with the preferred embodiment, the invention may be practiced using one or more general purpose computers responsive to one or more software programs prepared or written to perform the functions or the steps, described, as would be known to one of ordinary skill in the art.

The invention shown according to the inventive principles as disclosed in connection with the preferred embodiment is not limited to the examples shown. The data storage, access, serving and transmission systems and data signaling and protocol systems for arranging data into identifiable parts for recognition, interpretation and routing, may be any suitable systems presently available or as may be developed and as would be known to those of ordinary skill in the art.

The present invention, as would be known to one of ordinary skill in the art could be produced in hardware or software, or in a combination of hardware and software. The system, or method, according to the inventive principles as disclosed in connection

with the preferred embodiment, may be produced in a single computer system having separate elements or means for performing the individual functions or steps described or claimed or one or more elements or means combining the performance of any of the functions or steps disclosed or claimed, or may be arranged in a distributed computer system, interconnected by any suitable means as would be known by one of ordinary skill in art. According to the inventive principles as disclosed in connection with the preferred embodiment, the invention and the inventive principles are not limited to any particular kind of computer system but may be used with any general purpose computer, as would be known to one of ordinary skill in the art, arranged to perform the functions described and the method steps described. The operations of such a computer, as described above, may be according to a computer program contained on a medium for use in the operation or control of the computer, as would be known to one of ordinary skill in the art. The computer medium which may be used to hold or contain the computer program product, may be a fixture of the computer such as an embedded memory or may be on a transportable medium such as a disk, as would be known to one of ordinary skill in the art. The invention is not limited to any particular computer program or logic or language, or instruction but may be practiced with any such suitable program, logic or language, or instructions as would be known to one of ordinary skill in the art. Without limiting the principles of the disclosed invention any such computing system can include, inter alia, at least a computer readable medium allowing a computer to read data, instructions, messages or message packets, and other computer readable information from the computer readable medium. The computer readable medium may include non-volatile memory, such as ROM, Flash memory, floppy disk, Disk drive memory, CD-ROM, and other permanent storage. Additionally, a computer readable medium may include, for example, volatile storage such as RAM, buffers, cache memory, and network circuits. Furthermore, the computer readable medium may include computer readable information in a transitory state medium such as a network link and/or a network interface, including a wired network or a wireless network, that

allow a computer to read such computer readable information.

By way of example and without limiting the principles of the invention as disclosed, an example of a networked system for receiving users' requests for data, for arranging the users in groups with respect to the time or location in the data, and for sending the data in separate respective data streams to the respective groups, is shown generally by numeral 100 in Fig. 5. The system includes a server 110 having a data processor 120 and memory 125, with data store 130 and interface 140 for connection to a network such as for example, the World Wide Web or Internet, using a suitable software program such as a web browser. Data flow within the server 110 is as shown by bi-directional arrows 150, 160 170. A suitable computer program 135,as would be known to one of ordinary skill in the art, could be stored within data store 130 for transfer to processor memory 125 and use by processor 120 for performing the disclosed functions and method steps. As would be understood by those of ordinary skill in the art, the computer program may be contained or recorded in any suitable active or dynamic, stable or interim memory, as currently available or as may be developed by processor 120. As shown in Fig. 5, interactive connections are made with users n1, n2, n3,....nm-2, nm-1, nm. Information in the form of requests and data in the form of streaming data is shown by the respective bi-directional arrows 210, 220, 230, 240, 250, 260. As would be known to one of ordinary skill in the art, the system of Fig. 5 is shown by way of example without limiting the disclosed invention.

Although specific embodiments of the invention have been disclosed, it will be understood by those having ordinary skill in the art, that changes can be made to the specific embodiments without departing from the spirit and scope of the invention. The scope of the invention is not to be restricted, therefore, to the specific embodiments, and it is intended that the appended claims cover any and all such applications,

modifications, and embodiments within the scope of the present invention.

What is claimed is:

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CLAIMS

1. A system for transmitting data in a data stream to grouped recipients, comprising:

a server, for receiving users' requests for transmission of said data to said users;

said server, responsive to said users' requests, arranging said users in groups with each said user being arranged in a respective group; and

said server, responsive to the arrangement of said users in said groups, for transmitting said data in a data stream to said respective groups .

2. The system of Claim 1, wherein, said server realigns a respective user with said data stream to change the relative position of said respective user to the data being transmitted in said data stream, responsive to a signal from said respective user.

3. The system of Claim 1, wherein, said server arranges said users into said groups arranged by the size of said group.

4. The system of Claim 1, wherein, said server arranges said users into said groups arranged by a time interval for assembling said group.

5. The system of Claim 1, wherein, said server is limited to a maximum number of said groups and arranges said groups in relation to said maximum number.

6. The system of Claim 1, wherein, said telecommunications medium is the Internet.

7. The system of Claim 1, wherein, said user's requests are received from a world wide web browser.

8. The system of Claim 1, wherein,

said data is transmitted with identifiable locations in said data stream;

said server identifying a respective identifiable location in said data steam corresponding to said request; and

said server, moving said respective user to another of said groups receiving said data stream from another location in said data stream related to said respective identifiable location.

9. The system of Claim 8 wherein, said related location is advanced in time of transmission of said data stream relative to said respective identifiable location.

10. The system of Claim 8, wherein, said related location is delayed in time of transmission of said data stream, relative to said respective identifiable location.

11. The system of Claim 8, wherein,

said server has a plurality of ports and with each said group connected to a respective port for receiving said data stream from separate respective locations in said data stream through a respective port; and

said server, moving said user to a said separate respective location in said data stream by reconnecting said user to another of said respective ports.

12. The system of Claim 1, wherein,

said server has a plurality of respective ports;

said server is connected to users and said groups through separate respective ports; and

said server realigning a respective user with said data stream to change the data stream location said user is receiving said data or to change the time in the transmission of said data stream said user is receiving said transmission, by reconnecting said user to another of said respective ports.

13. The system of Claim 12, wherein,

said respective ports have a plurality of respective sockets and said users are connected to respective sockets;

said server has a plurality of pointers into separate respective locations in said data store associated with respective sockets, for sending data from said separate respective locations in said data store to said respective sockets and to said respective users associated with said respective sockets; and

said server realigning a respective user with said data stream to change the location in said data stream said user is receiving said data or the time in the transmission in said data stream, said user is receiving said data, by reconnecting said respective user to another respective socket connected to another respective pointer.

14. The system of Claim 12, wherein

said ports have a plurality of respective sockets and said respective users are connected to respective sockets;

said server has a plurality of pointers, into separate respective locations in said data store, connected with respective sockets, for sending data from said separate respective locations in said data store to said respective sockets and said respective users connected to said respective sockets; and

said server realigning a respective user with said data stream to change the location in said data stream said user is receiving said data or the time in the transmission in said data stream, said user is receiving said data, by moving said pointer for a respective socket to another location in said data store.

15. The system of Claim 1, wherein the position of said user relative to said data in said data stream is changed in relation to the location of the data being transmitted in said data stream.

16. The system of Claim 1, wherein said position of said user relative said data in said data stream is changed in relation to the time of transmission of said data.

17. The system of Claim 1, further comprising:

means for signaling connected to said users for sending discrete respective signals to said server;

said server, responsive to said discrete respective signals, realigning a respective user with said data stream to change the relative position of said respective user to the data being transmitted in said data stream; and

wherein, said realignment is in discrete steps relative to position of said respective user to the data being transmitted in said data stream.

18. The system of Claim 17, wherein, said discrete respective signals include signals for advancing or retarding said realignment of said respective position of said respective user.

19. The system of Claim 17, wherein, said discrete respective signals include signals for realignment in discrete intervals.

20. The system of Claim 19, wherein said discrete intervals are intervals of time displacement.

21. The system of Claim 19, wherein said discrete intervals are intervals of space displacement in the location of said data in said data stream.

22. A system of Claim 1, wherein,

said server includes means for disconnecting a respective user with said data stream at an identifiable location in said data stream and for reconnecting said user to another data stream.

23. The system of Claim 22, wherein,

said server includes means for disconnecting said respective user with said another data stream after a discrete interval and reconnecting said user with said data stream at said identifiable location.

24. The system of Claim 23, wherein,

said server means for reconnecting said user with said data stream is a pointer for accessing data in said data store at discrete locations.

25. In a system for transmitting data in a data stream sent from a server to a plurality of users requesting access to said data stream at substantially the same time, and responsive to users' requests for data, arranging said users into groups by time or number of requests, for transmission of the same data in said data stream to the respective users in respective groups, and distributing the user load on said server and shifting said user load toward a steady state load by distributing said groups over said data transmission by time of said data transmission or place in said data transmission, comprising:

a server;

said server having means for connecting said server to a telecommunications network for the transmission of data; and

said server including means for responding to requests received from said telecommunications network for data, for identifying the individual requesters as the source of respective requests and arranging said individual requesters in respective groups for receiving said data in a data stream.

26. The system of Claim 25, wherein,

said groups are arranged by number of said individual requesters.

27. The system of Claim 25, wherein,

said groups are arranged by the time of said requests.

28. The system of Claim 25, wherein said server is limited to a maximum number of said groups and data processor arranges said groups in relation to said maximum number.

29. The system of Claim 25, wherein said telecommunications medium is the Internet.

30. The system of Claim 25, wherein said user's requests are received from a world wide web browser.

31. The system of Claim 25, wherein said server includes means for shifting said respective individual requesters between said groups to change the time of reception of said data relative to said data transmission.

32. The system of Claim 25, wherein,

said data is accessed from a data store; and

said server includes means for changing the location in the data store accessed for shifting the location of the data relative to said data transmission.

33. A method for transmitting data to users requesting said data, arranged in groups to receive said data, comprising the steps of:

connecting a server having a data store, and an interface for connection to said server for sending data from said data store through said telecommunications medium;

responsive to requests, arranging said users in groups with each said user being arranged in a respective group; and

sending said data stream from said data store, as streaming data to said respective groups.

34. The method of claim system of claim 33, wherein said step of arranging includes the step of arranging said groups in relation to a maximum number of said groups said server can send said data.

35. The method of Claim 33, including the step of sending said data through the Internet.

36. The method of Claim 33, including the step of receiving said user's requests from a world wide web browser.

37. The method of Claim 33, wherein, said step of arranging includes the step of realigning a respective user with said data stream to change the relative position of said respective user to the data being transmitted in said data stream, responsive to a signal from said respective user.

38. The method of claim 33, wherein, said step of arranging, arranges said users into said groups arranged by the size of said group.

39. The method of claim 33, wherein, said step of arranging, arranges said users into said groups arranged by a time interval for assembling said group.

40. The method of claim 33, wherein, said data is transmitted with identifiable locations in said data stream, and the method further comprising the steps of:

identifying a respective identifiable location in said data steam corresponding to said user signal; and

moving said user to another of said groups receiving said data stream from a location in said data stream related to said respective identifiable location.

41. In a system for transmitting data in a data stream sent from a server to a plurality of users requesting access to said data stream at substantially the same time, a method for arranging said users into groups by time or number of requests, for transmission of the data in said data stream to the respective users in respective groups, and distributing the user load on said server and shifting said user load toward a steady state load by distributing said groups over said data transmission by time of said data transmission or place in said data transmission, comprising the steps of,

arranging a server having a data processor to a telecommunications network for the transmission of data; and

responding to requests for data received through said telecommunications network, for identifying the individual requesters as the source of respective requests and arranging said individual requesters in respective groups for receiving said data.

42. The method of Claim 41, wherein,

said step of arranging includes the step of realigning a respective user with said data stream to change the relative position of said respective user to the data being transmitted in said data stream, responsive to a signal from said respective user.

43. The method of Claim 41, wherein,

said step of arranging includes the step of arranging said groups by number of said individual requesters.

44. The method of Claim 41, wherein,

said step of arranging includes the step of arranging said groups by the time of said requests.

45. A computer program product for use in the operation of a computer transmitting data in a data stream to users requesting said data, comprising,

means for connecting a telecommunications medium for sending said data to said users of said data;

means for arranging said users in groups with each said user being arranged in a respective group, responsive to a request made by said user; and

means for sending said data stream from said data store, as streaming data to said respective groups.

46. In a system for transmitting data in a data stream sent from a server to a plurality of users requesting access to said data stream at substantially the same time, a computer program product for use in a method of operating a computer for arranging said users into groups by time or number of requests, for transmission of the data in a data stream to the respective users in respective groups, and distributing the user load by distributing said groups over said data transmission by time of said data transmission or place in said data transmission, comprising the steps of,

responding to requests for data received from requesting users, for identifying the individual requesters as the source of respective requests and arranging said individual requesters in respective groups for receiving said data; and

distributing said groups over said data transmission by time of said data transmission or place in said data transmission.

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47. A computer program product for use in a method of operating a computer, comprising the steps of:

receiving requests for data from users requesting said data;

arranging said users in groups with each said user being arranged in a respective group; and

responsive to said users' requests, sending said data stream from said data store, as streaming data to said respective groups with said groups receiving separate respective portions of said data relatively displaced in space or time.

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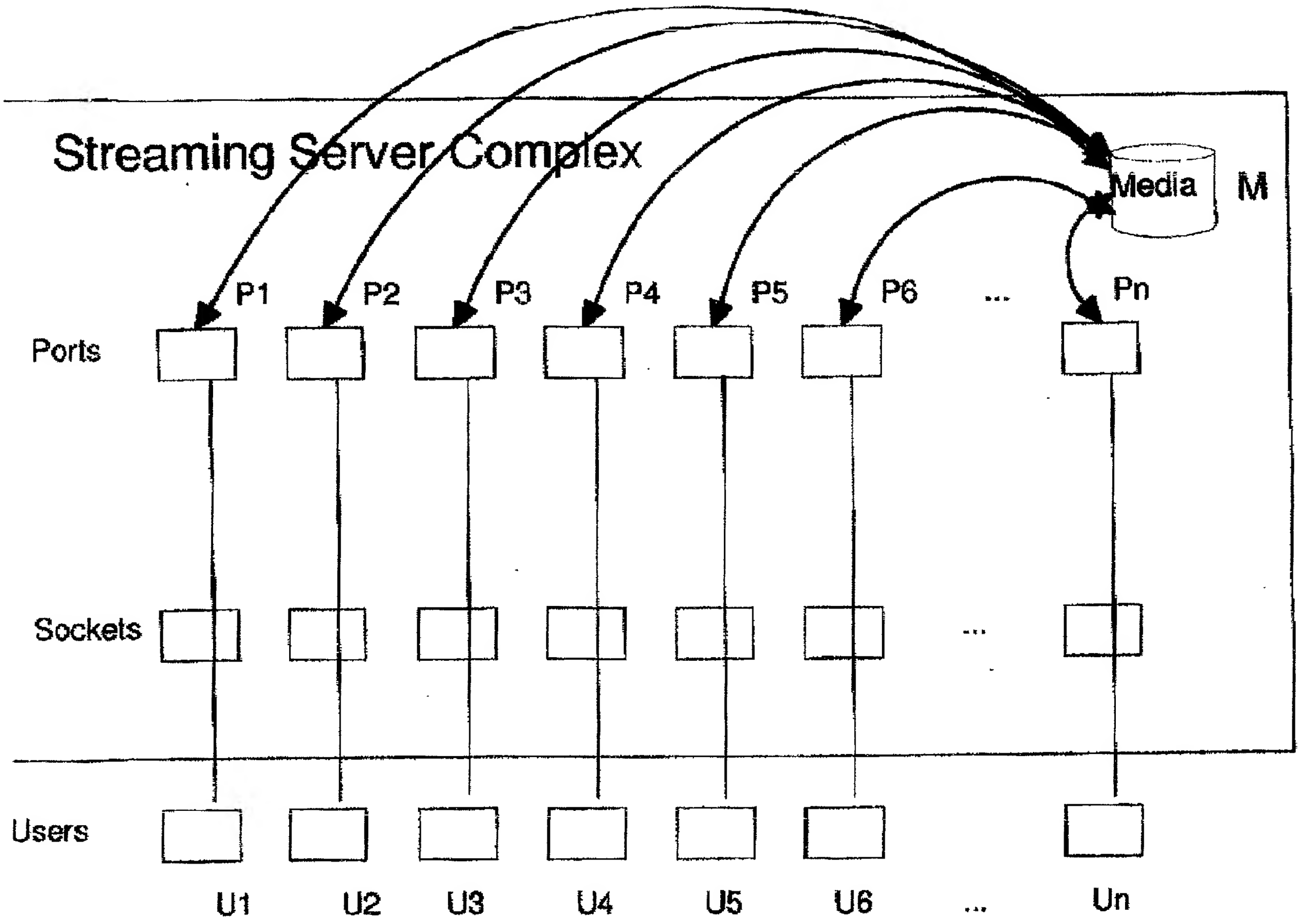
SYSTEM AND METHOD FOR GROUPING RECIPIENTS OF STREAMING DATA

Abstract of the Disclosure

A data stream is transmitted to groups of individuals making separate requests for the data stream. The groups may be arranged by placing a maximum number of requesters in a group or by grouping the requesters making requests within a discrete period of time. The individual requester may be shifted from group to group or from a data store to another data store location to change the location in the data stream from which the data is sent to an individual requester or the time of transmission of the data sent from the data store.


Streaming Server Complex
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Ports
Sockets
Users
U1
U2
U3
U4
U5
U6
...
Un

Figure 1.

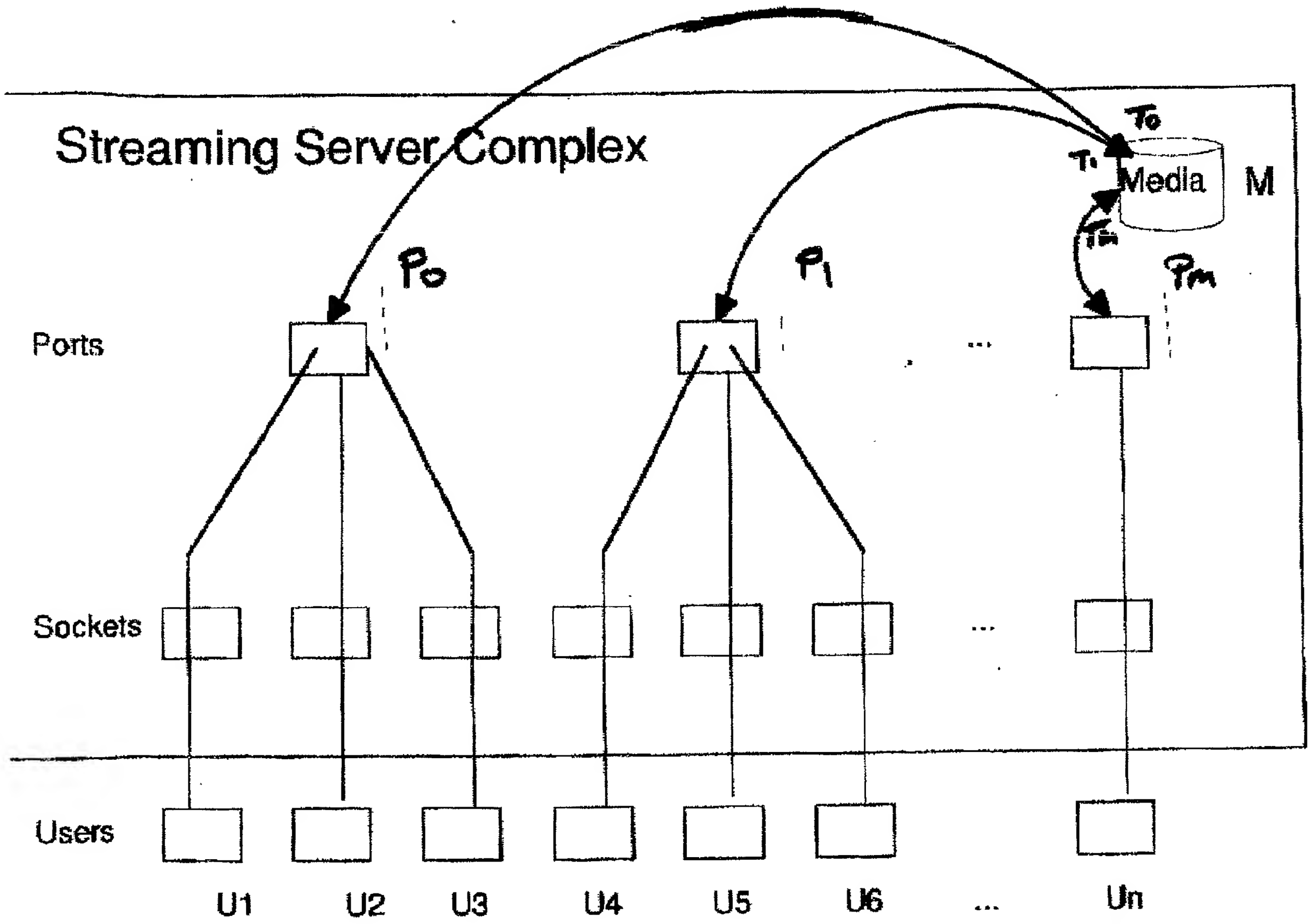
Streaming Server Complex
Ports
Sockets
Users
Media
M
T_0
T_1
T_m
P_0
P_1
P_m
U1
U2
U3
U4
U5
U6
...
Un

Figure 2.

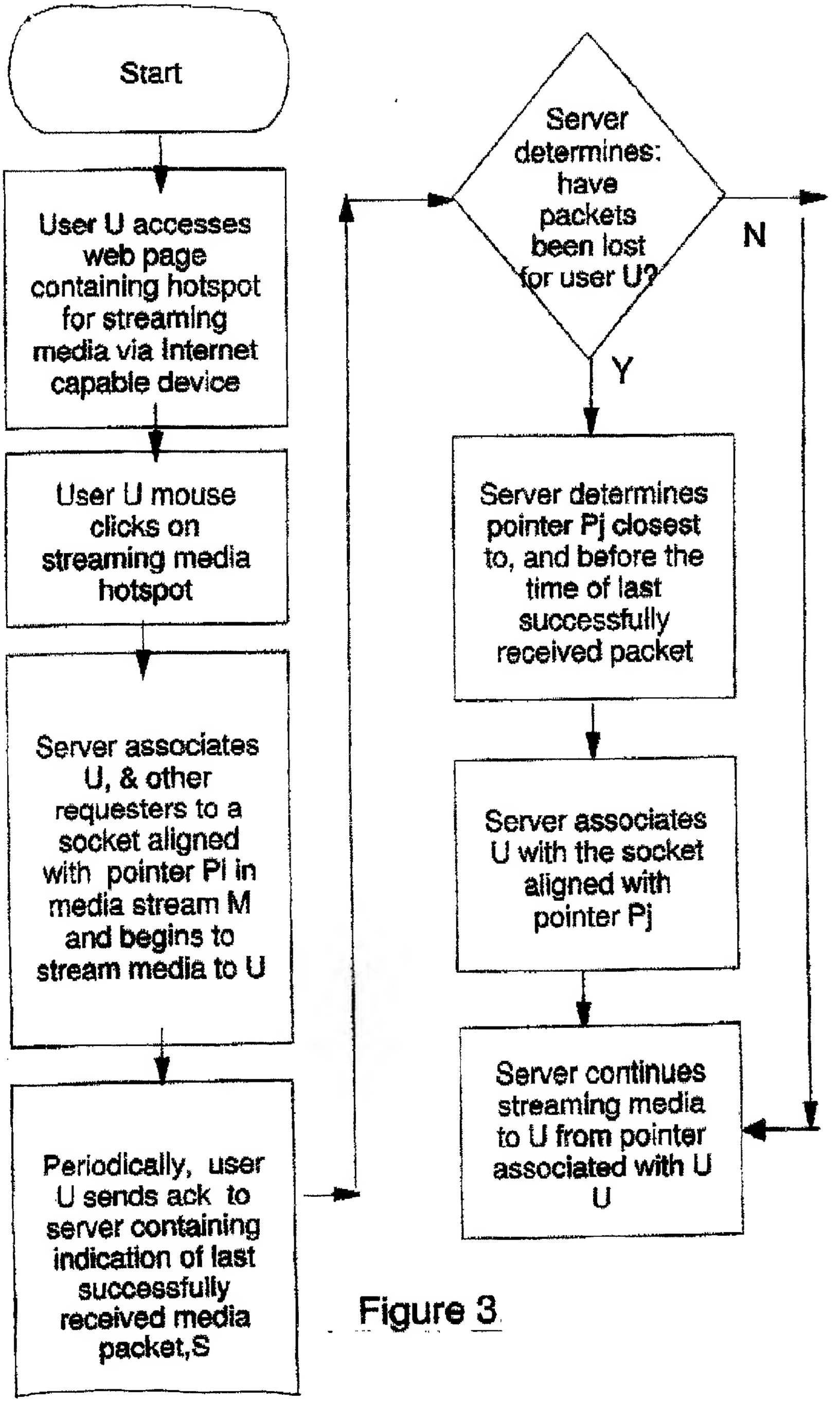
Start
User U accesses web page containing hotspot for streaming media via Internet capable device
User U mouse clicks on streaming media hotspot
Server associates U, & other requesters to a socket aligned with pointer Pi in media stream M and begins to stream media to U
Periodically, user U sends ack to server containing indication of last successfully received media packet,S
Server determines: have packets been lost for user U?
Y
N
Server determines pointer Pj closest to, and before the time of last successfully received packet
Server associates U with the socket aligned with pointer Pj
Server continues streaming media to U from pointer associated with U U

Figure 3

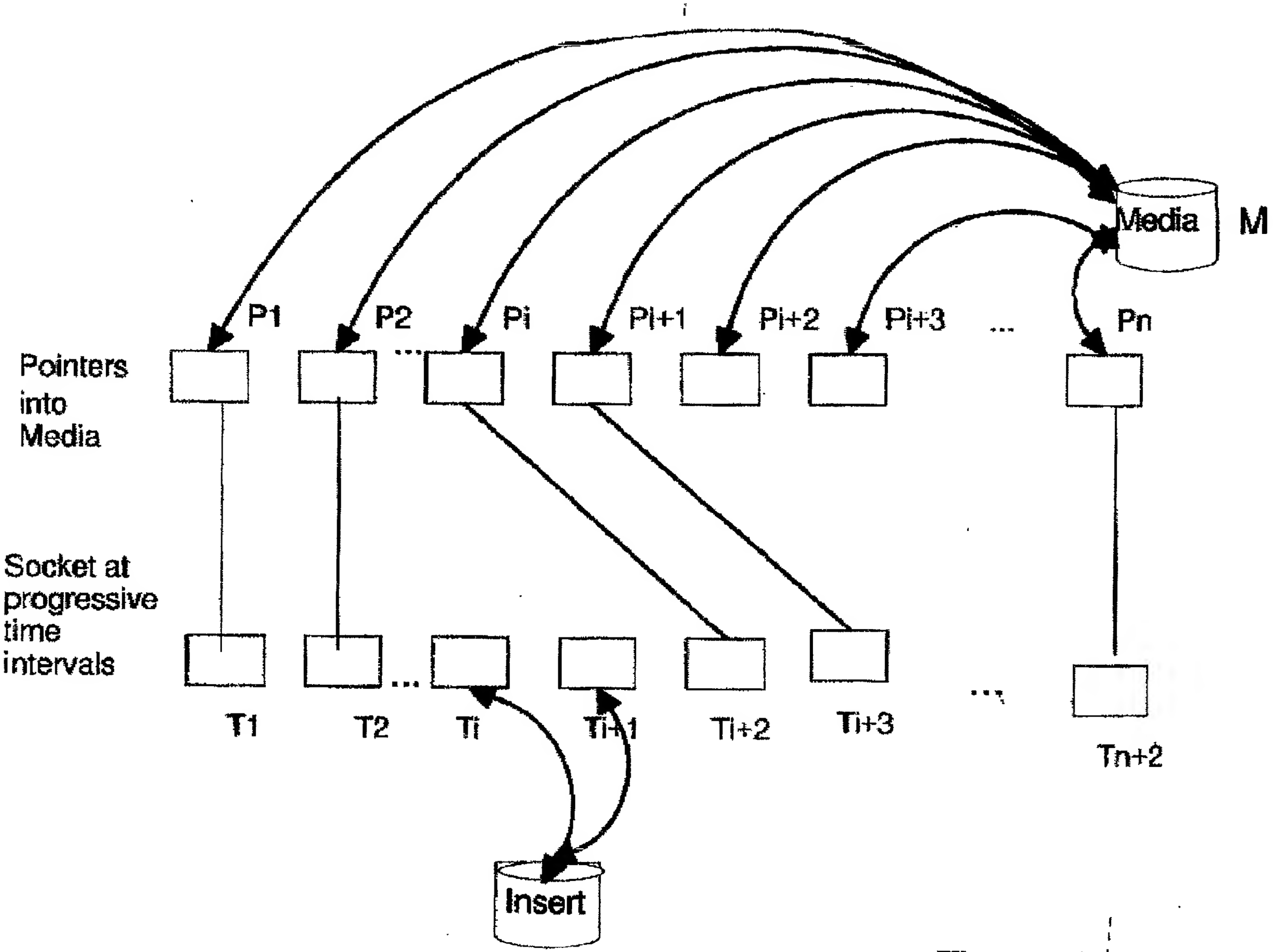
Media
M
P1
P2
Pi
Pi+1
Pi+2
Pi+3
...
Pn
Pointers into Media
Socket at progressive time intervals
T1
T2
Ti
Ti+1
Ti+2
Ti+3
...
Tn+2
Insert

Figure 4.

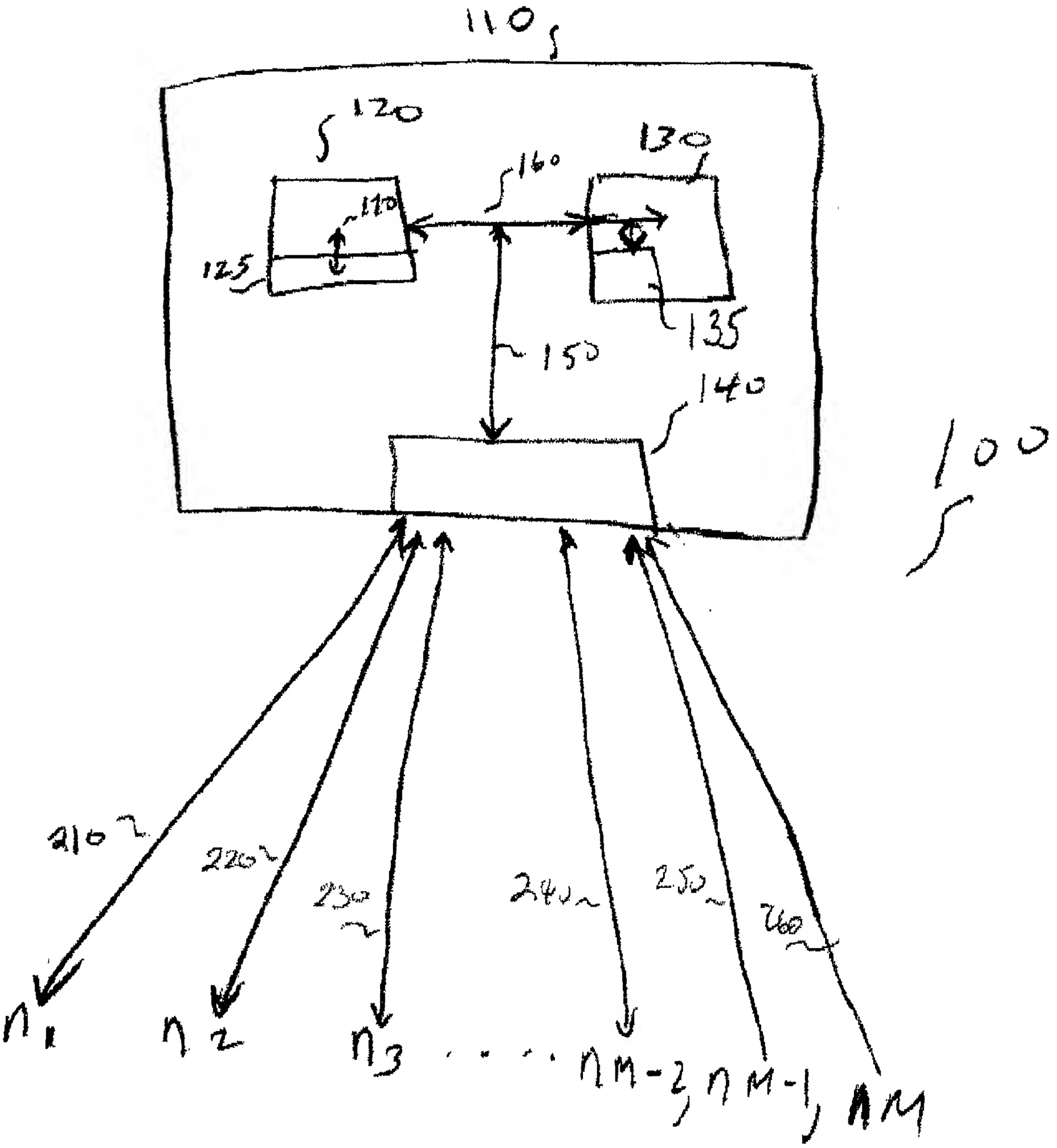
110
120
130
160
170
125
135
150
140
100
210
220
230
240
250
260
n1
n2
n3
nM-2, nM-1, nM

Fig 5

EXPRESS MAIL LABEL NO. EL470370794US

PATENT

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

I believe I am an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

SYSTEM AND METHOD FOR GROUPING RECIPIENTS OF STREAMING DATA

the specification of which: (check one)

XXX is attached hereto.

_____ was filed on _____
under Attorney's Docket Number _____
as Application Serial No. _____
and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with 37 CFR 1 56.

I hereby claim the benefit of foreign priority under 35 USC 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application the priority of which is claimed:

Prior Foreign Application(s):			Priority Claimed
_____ (Number)	_____ (Country)	_____ (Filing Date)	_____Yes _____No

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_____ (Application Serial #)	_____ (Filing Date)	_____ (Status)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 USC 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorneys and/or agents to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

Richard A. Tomlin	Reg. No. 24,449	Frederick T. Boehm	Reg. No. 32,458
Stephen C. Bongini	Reg. No. 40,917	A. P. Tennent	Reg. No. 35,807
Jon A. Gibbons	Reg. No. 37,333	Kenneth A. Seaman	Reg. No. 28,113
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Send correspondence to Jose Gutman, Fleit, Kain, Gibbons, Gutman & Bongini, P.L., 4400 N. Federal Highway, Suite 32, Boca Raton, Florida 33431 and direct all telephone calls to Jose Gutman at (561) 417-9477.

FULL NAME OF INVENTOR: Edith H. STERN

INVENTOR'S SIGNATURE: Edith H. Stern DATE: 1/21/00

RESIDENCE: 4599 N.W. 5th Avenue, Boca Raton, Florida 33431

CITIZENSHIP: USA

POST OFFICE ADDRESS: same as above

FULL NAME OF INVENTOR: Barry E. WILLNER

INVENTOR'S SIGNATURE: _____ DATE: _____

RESIDENCE: 365 Pine Road, Briarcliff Manor, New York 10510

CITIZENSHIP: USA

POST OFFICE ADDRESS: same as above

FULL NAME OF INVENTOR: Victor S. MOORE

INVENTOR'S SIGNATURE: Victor S. Moore DATE: 1/26/00

RESIDENCE: 4739 Pine Tree Drive, Boynton Beach, Florida 33436

CITIZENSHIP: USA

POST OFFICE ADDRESS: same as above

FULL NAME OF INVENTOR: James M. DUNN

INVENTOR'S SIGNATURE: _____ DATE: _____

RESIDENCE: 33 Ixora Way, Ocean Ridge, Florida 33435

CITIZENSHIP: USA

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FULL NAME OF INVENTOR: Victor S. MOORE

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RESIDENCE: 4739 Pine Tree Drive, Boynton Beach, Florida 33436

CITIZENSHIP: USA

POST OFFICE ADDRESS: same as above

FULL NAME OF INVENTOR: James M. DUNN

INVENTOR'S SIGNATURE: James M Dunn DATE: 2/1/00

RESIDENCE: ~~33 Ixora Way, Ocean Ridge, Florida 33435~~ 10184 N. ROWELL AVE. FRESNO, CA 93720

CITIZENSHIP: USA

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